

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

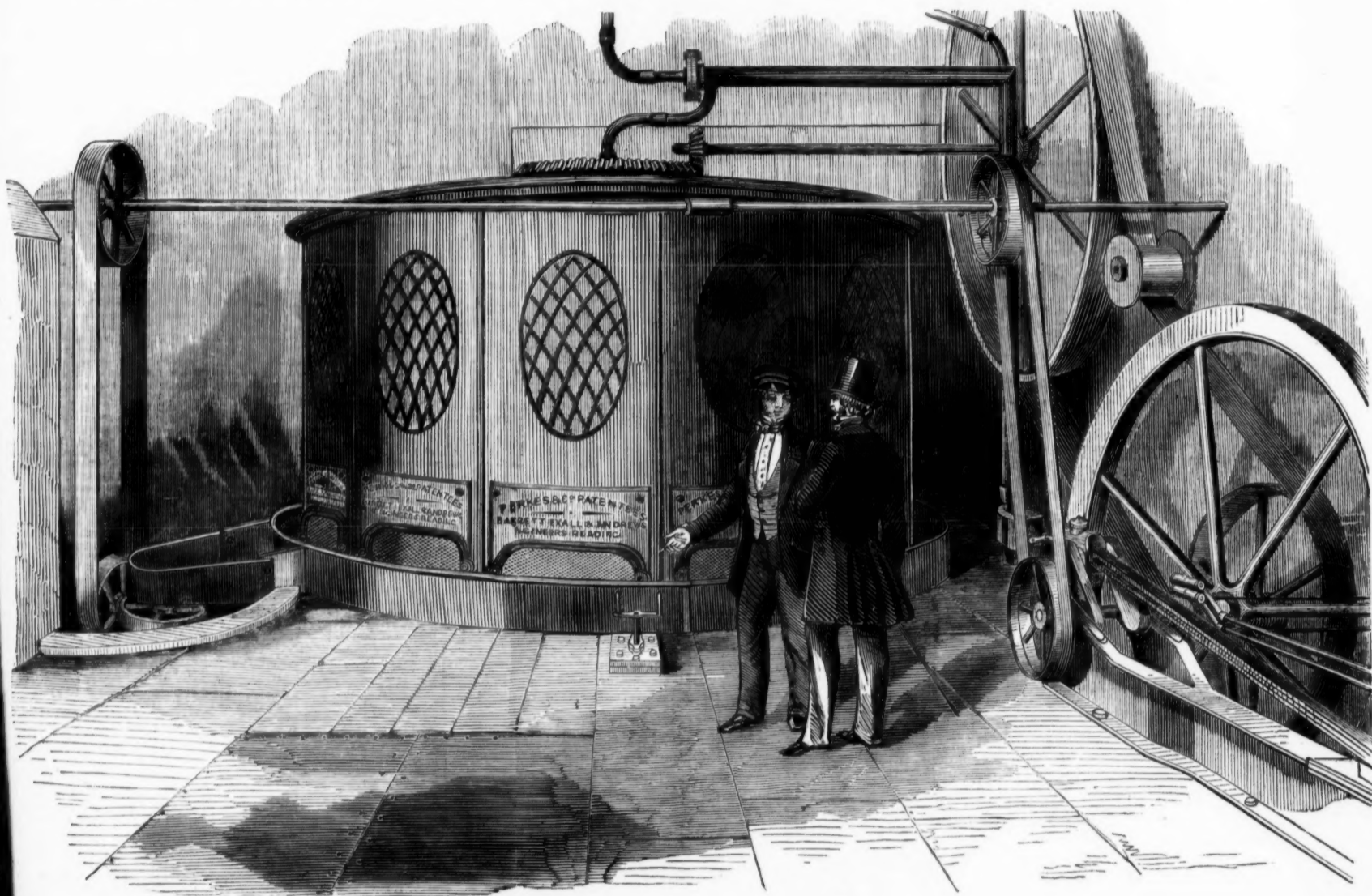
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LONDON, SATURDAY, MAY 6, 1854.

[GRATIS.]

[ADVERTISEMENT.]

SAMUEL PERKES'S GOLD REDUCTION AND AMALGAMATING MACHINE.



Having in the *Mining Journal* of the 18th March last inserted a full description of the arrangement of one department of Mr. Samuel Perkes's establishment, at Vulcan Wharf, Upper Thames-street, for reducing auriferous rocks, and obtaining the produce by amalgamation with mercury, and the smaller machines, laboratory, subliming furnace, &c., we now, as then announced, to describe the other portion, situated close on the banks of the Thames, and which contains the large machine, a horizontal steam-engine for working it, with the furnace, boiler, calcining oven, and necessary appendages for securing the best results. The above engraving gives a correct representation of the arrangements, drawn to scale. The machine consists of a cylindrical chamber of cast-iron, 12 ft. in diameter and 8 ft. high, on the solid base plate of which revolve six cast-iron rollers, each weighing 8000 lbs., giving a crushing power at each revolution of 48,000 lbs., or nearly 21½ tons. These rollers nearly cover the base plate, leaving only a small space between each for the admission of the material. They have three distinct motions—they rotate on their axes, revolve round the interior of the cylinder, and have slightly a grinding motion, as they do not all converge geometrically to a central point, but are cast somewhat differentially with the circumference of the cylinder, but not to such an extent as to cause an injurious amount of friction to impede their progress. The base plate slightly inclines towards the centre, giving a tendency to the amalgamated mercury to that point, to some extent counteracting the centrifugal force induced by the rapid revolution of the cones, and at which point is a valve, or stop-cock, for drawing off the amalgam, which operation is performed in a chamber beneath, constantly kept under lock and key. A vertical shaft, which sets the rollers in motion, is hollow, down which a continuous stream of water, which, uniting with the debris of the mineral, carries it off through the wire gauze frames shown in the engraving, containing 6400 meshes to the square inch, through which can escape but a material finer than the best wheaton flour. From the high encircling the base of the machine the tailings are conducted into a reservoir, in which is an agitator, so that the refuse is carried away, leaving any deposit behind. To prevent, also, any settlement of the refuse in the surrounding trough, an iron tube encircles the reservoir, having jets of water at every 6 inches, which, agitating it, and also its liquidity, prevents any settlement. The action of the machine

is as follows:—An internal hopper conducts the material, consisting of partially broken rock fed into the machine through a gauge plate in the floor above, between the cones, the first of which pulverises it to a certain extent on the bottom of the pan and underneath the mercury; as the cones travel in the quicksilver, which covers the entire area of the cylinder to a certain depth, the instant the first cone has passed over the material it rises from its less specific gravity to the surface, but is immediately taken hold of again by the second cone, and so on through the series, making about 120 revolutions per minute, each time being more completely pulverised. The rapidity with which the powder and the films of gold are triturated through the mercury causes complete amalgamation, and every known test has been tried by analytical chemists to detect mercury in the tailings, without success. The steam-engine, as seen in the engraving, is on the horizontal principle, and has some valuable improvements in the arrangements of the valves, connecting rods, &c.; it is nominally 12-horse power, but by the expansion gearing can, with every degree of safety, be worked up to 20-horse power, should there be any necessity for it. The machine works comparatively with as much smoothness and regularity as the smaller ones, and it has been found that 12-horse power is ample for general operations: lumps of rock weighing 20 lbs. have been crushed by it, which, although such will never be operated on in practice, is a convincing proof of the crushing capabilities of the machine. While every part of the machinery, steam-engine, furnace, agitator, &c., can be easily got at for cleansing or repairs, the auriferous contents are securely placed beyond reach of any but the party who is confidentially appointed to superintend the operations. The quantity of mercury employed is about 1 ton. We have carefully noticed its progress while in operation, and it appears to us to possess every essential for crushing to an impalpable powder, effecting perfect amalgamation of every particle of gold contained in the matrix, losing only a mere nominal portion of mercury, and presenting every possible facility for rapid and continuous operations. The various parts of the machine are simple, but of great strength and evident durability, and there is no liability to get out of order. The machine performs its work with the greatest ease and cleanliness. The water can in all cases, when required, be warmed by a simple apparatus, constructed for the purpose by the patentee; but will not be required when steam-power is employed, as then the waste steam can be conveyed underneath the machine itself, to warm both the water and mercury.

It has already operated upon 15 tons of mineral, being a complete mixture of gossan, quartz, mundic, capel, decomposed granite, &c., the entire

remnants of almost every sample of mineral sent to Mr. Perkes for trial, and some of which was, to our knowledge, of the foulest description that could possibly be conceived, containing, as some of them did, an immense amount of arsenic, sulphur, &c.; yet in no one instance has Mr. Perkes had the least symptoms of the mercury being affected by any one of them, and he expresses his entire confidence that, with proper care, there is no practical difficulty in treating ores generally, however arsenical or sulphurous they may be. As this bulk of minerals is a thorough practical trial of the capabilities of the machine, and being a mixture from almost every district throughout Great Britain and Ireland, Mr. Perkes has determined, in compliance with the wishes of many parties connected with mining operations, to distil the mercury, particularly as it will give an approximate average yield of the ores he has operated on. This result will be exceedingly interesting, and we shall furnish our readers with a report thereon as soon as completed. A portion of the Dolfrwynog mineral has already been operated upon by Mr. Perkes's machine, which has given a yield fully equal to the expectations of the directors, and a very large quantity will shortly be sent up for reduction. Upon the whole, we are bound to confess that hitherto we have seen nothing which appears more thoroughly practical than this large machine, and have every confidence in saying that it will realise all that the patentee has stated it would accomplish.

PORTABLE STEAM-ENGINES.—Messrs. N. Clayton and J. Shuttleworth, agricultural engineers, Stamp-end, Iron-works, Lincoln, have invented an improvement in portable and locomotive steam-engines: it consists in placing the working cylinder or cylinders of portable and locomotive steam-engines in a steam-chamber or jacket within the smoke-box, whereby condensation of steam within the cylinder, and radiation of heat therefrom, is effectually prevented. The form of the steam-chamber or jacket, its position within the smoke-box, and the communication between the steam-chamber and the boiler, may be so disposed and varied as to suit the particular construction of the engine, and the purpose for which it is to be used,—the best arrangements of which will occur to any intelligent workman. The patentees remark, that they are aware that the working cylinders of steam-engines have been heretofore surrounded by a steam-chamber or jacket, and also that the working cylinders of locomotive and portable steam-engines have been sometimes placed within the smoke-box; but they have found considerable advantage to arise from surrounding the working cylinder with a steam-chamber,—such steam-chamber being placed within the smoke-box of the engine. The patentees claim the combination of surrounding the working cylinder or cylinders of portable and locomotive steam-engines with a steam-chamber or jacket, placed within the smoke-box of the engine.

The receipts of the Great Western Railway of Canada for the week ending the 14th of April were \$8601. sterling, making a total of \$4,4591. sterling since the 1st of January.

GREAT CRINNIS COPPER MINING COMPANY.

The first general meeting of shareholders was held at the offices of the company, on the 29th April.

Mr. JAMES CORBETT in the chair.

After the usual preliminary proceedings, the CHAIRMAN observed that as the report about to be read would be found to contain a full account of the past proceedings and present position of the mine, he thought it unnecessary to detain the meeting by any preliminary observations, beyond stating that the reason why the shareholders had not been called together before was that by the rules the annual meeting is fixed for April. The committee had also delayed calling the meeting as long as possible, hoping from day to day to be in a position to state the result of the working of Berdan's machine, which was not opening from various causes, however, the last day in the month had arrived, and the machines had not yet been at work, although now nearly completed, and certainly many days would not pass without the question of their utility being determined. He (the chairman) now put to the meeting whether the rules should be read *in extenso*. It was decided they should, and they were accordingly read and approved by the meeting.

The SECRETARY then proceeded to read the following documents:—

Abstract of the Accounts for Sixteen Months, to December, 1853.

Cr.—Capital of the company	£50,000 0 0
Amount received by sale of copper ore	30 16 0 = £50,036 16 0
Dr.—Agents' salaries	£ 183 15 0
Tutwork bargains	1,268 12 9
Bargains on surface	371 3 11
Carpenters, smiths, &c.	680 6 11
Carriage	178 7 11
Water cost	1,758 10 8
Materials	4,133 5 3
Dressing cost	10 19 2
Expenses on ores	146 0 0
Tribute payments	146 0 0
Sundry labour	300 14 8
Sundries, preliminary payments, &c.	2,318 3 6
Paid on account of Berdan's machine	250 0 0
Paid for leases, &c., in shares	7,000 0 0 = 18,550 17 11
Leaving balance of	£11,308 18 1

REPORT OF THE COMMITTEE OF MANAGEMENT.

The directors of the Great Crinnis Copper Mining Company, in meeting their brother shareholders for the first time since its formation, have the great satisfaction of being able to say that the present position and future prospects of the property are such as to have converted the expectations which they always entertained of the mine yielding, at no distant period, very large returns for the capital invested into an absolute certainty. That the pleasures of a dividend have not yet been experienced is a matter of regret; but if these gentlemen, who from an over-zealous and possibly anticipated that a great event would have happened ere now, would only consider the large amount of important work required, and the great length of time which must necessarily be consumed in bringing an abandoned mine into a condition of even paying its monthly cost-sheet, not to speak of those unforeseen difficulties and accidents which always arise in prosecuting work of any magnitude, they would not as yet be too impatient. Only eleven months have elapsed since the engine was erected, and in that short period a quantity of work has been undertaken and performed, which your directors venture to assert has rarely been accomplished in any mine in England—a result attributable, among other causes, to the perseverance, close attention, and good judgment of the mining agent, Capt. Webb. When the sett was first taken by the present company the whole surface was a wilderness of rubbish, while the shafts and underground workings, which no man had visited for nearly 30 years, were of necessity filled with water, and choked with decayed materials. The contrast is now striking indeed. An excellent 63 in. cylinder engine, purchased of the West Par Company, for the moderate sum of 12,000 l. is at work, keeping the mine dry at least half its power, to the 40 fathom level. The engine-house, boiler-house, blacksmith's shop, with two forges, carpenter's shop, powder-house, and other necessary buildings, have been erected, and are full and complete. Two large cast-iron and several horse-wheel, for sending down materials and drawing ores to surface. A copper ore crushing machine, purchased of Mr. West, of St. Blaise, is in course of erection, and will shortly be at work, and the directors fully expect it will soon find ample employment. A steam-whim will be also placed on the mine as early as possible. The apparent delay which has taken place in supplying these important machines must be attributed to the caution of the committee, who have, as business men, always felt unwilling to incur any considerable outlay until convinced of its necessity, and who were averse to order a crusher and steam-whim, until there was a quantity of ore either at surface or in sight. This is a matter of caution, and not of parsimony, but your directors hope not to be seriously blamed for having exercised it in this case. There are shafts well-timbered, and connected with each other at various levels, and from the adit down to the 80, soon to be extended to the 100 ft. level.

Underground, as far as the water is in fact, every old working has been explored, and new levels driven, so as to lay open the mine in the best way to make it yield up its bountiful treasures which it undoubtedly contains. In the 10 ft. level, at Cornish's shaft, driving east upon the north part of the great lode, a quantity of rich copper ore is in sight, and a great improvement has become visible during the last 3 fms. driving. In the 17, between old sump and Cornish's shaft, a considerable quantity of ore has been raised. A new discovery has been lately made in the 24, indicating great riches. A specimen lies on the table for inspection. Rich silver-lead and copper show in abundance in the same level at Hannah's shaft; samples are in the office. In the 40 the new lode found in the 24 is opened on, and is giving great satisfaction. The lower levels down to the 80 are opened upon, and there appears every reason to expect a large produce of copper and silver, as will be more fully seen in reference to the report of Capt. Webb. The only parcel of copper ore actually sold as yet was obtained from the adit level, at Daniel's shaft; its net value was 39l. 16s., and it is remarkable that it was of a higher standard than any sold at that level. There is now at surface about 10,000 tons of muddle, and of other ores ready for the crusher more than twice that quantity.

The finances of the company are highly satisfactory, as there is no doubt of the capital already subscribed being quite sufficient to bring the mine into a dividend paying condition. A financial statement is appended to this report, showing the income and expenditure to Jan. 1, 1854; also Capt. Webb's report, dated April 25, showing the present state of the workings.

The committee, in taking up this part of the subject, again beg to congratulate the shareholders on possessing a mine of so much intrinsic value, and to record their own opinions, founded on personal examination, corroborated by satisfactory evidence, that copper, silver, lead, and other ores, the produce of what may be termed legitimate mining—that is the object for which the company was originally formed—Great Crinnis will, in time, equal the best in the county of Cornwall, and that the present value of the shares would be moderately estimated at many times the sum paid for them, from the mineral wealth already laid open; and all that is required to realise this to every one's satisfaction is, that the works should be carried on in a sound mining-like manner, and with the same energy, zeal, and determination which have characterised the management hitherto. This, with perseverance and time, must produce the desired result, and the shareholders will particularly feel, while taking their dividends, that in the lottery of mining they have drawn a prize.

The directors now turn to a subject upon which a difference of opinion may possibly exist. They allude to the question whether gold exists in the mine, and whether it can be got out profitably if it does. Every one interested in mining knows the excitement occasioned in the latter part of last year by the discovery that a machine had been patented for profitably extracting the precious metal from all ores containing it, whether poor or rich. In common with the manager of almost every mining property in England and Wales, the directors of your company gave the important subject their most anxious consideration. They obtained small samples of muddle and gossan from different levels, and had them assayed by some of the first assayers in London, including Messrs. Johnson and Matthey and Mr. John Mitchell, who pronounced them rich in silver, with a trace of gold. They then obtained a larger sample, about 60 lbs. gossan, taken roughly off the cliff, where millions of tons exist. This quantity was passed through Berdan's machine with a surprising result; the produce was 45 grs., equal to 3 ozs. 6 dwts. 20 grs. of pure gold to the ton of ore. Not content with these experiments, they obtained a larger quantity of the same ore from the mine, 1 ton from the cliff, as before, and a similar quantity from the 19 ft. level, in Charles's shaft, not selected from any particular specimen, but taken as it came to hand. The respective 4 tons were crushed and amalgamated separately by Berdan's machine, the whole of the directors being present from the beginning to the end of the trial. The result proved not so large as the first experiment, but was highly satisfactory, showing a produce of nearly 10 oz. to the ton—an amount which, considering the raw material at hand, would yield an enormous revenue above the expense of working. Fully believing the integrity of the experiments, the directors felt it advisable to order a machine to be placed as soon as possible on the mine. Mr. Berdan received the order in December, promising to deliver it early in February, but owing to a variety of impediments it was not delivered until late in March. As early as possible after it was shipped to Cornwall, together with a steam engine, which had been purchased to drive it. The whole are now nearly ready to work, and, according to all appearances, a week or ten days will decide the momentous question as to the existence of gold in the great bulk of our gossan, as it most undoubtedly exist in the samples. However this may be, the directors feel perfectly satisfied of their having acted promptly as well as carefully for the interest of their brother shareholders. Having so much evidence, commercial as well as scientific, of the distribution of gold in the Crinnis ores, they saw no reason for any further delay, thinking that the sooner it was got out the better, particularly as the legitimate operations of the mine were in no degree interfered with or delayed, nor would the expense of working the experiments on this large scale be very great, inasmuch as the machines and materials would realise, if a failure unfortunately should take place, something nearly approaching the outlay incurred. However, the directors see no reason for apprehending failure now any more than they saw at first; certainly other mines having Berdan's machine have for the present failed in the desired object. This is patent to all, and is so far discouraging; but as the circumstances and material operated on are widely different, they do not admit this to be a reason for doubting the success of their own experiment. At all events, no failure shall be acknowledged until every known means have been exhausted to arrive at the truth.

In conclusion, the committee, while thanking the shareholders for the confidence which they have placed in them, have only to add that, as long as they are in office, their best exertions shall be given to work the property entrusted to their management in an energetic and business-like way, so as to place Great Crinnis Mine where it formerly stood—among the most profitable concerns in this country.

MINING CAPTAIN'S REPORT.

April 25.—I beg to hand you, for the general meeting of shareholders, a report of what has been done at the Great Crinnis Mine; also its present prospects, together with recommendations as to future workings. Since the engine was started in June last, we have drained the mine 30 fms. below the adit (sea level). The engine-shaft is furnished with large and substantial pitwork. We have also drained Union shaft to the bottom by attaching horizontal rods to the engine. I find that there are about 15 fms. to drive to effect a communication on this level to state the worth, but very probably new shoots of ore will be found in this direction. I calculate having taken out in gleaming the old workings about 15000 worth of copper and silver ore, which will be ready for sale soon after the crusher (now erecting) is ready. There are at present six tribute pits, varying from 7s. to 12s. in *l.*, and on tutwork 30 men. I consider the mine is just put into good order for exploring the old lode in new ground, and cross-cutting and opening out on parallel lodes. I recommend the following work for immediate execution:—Cut

through the piece of ground in the 80 ft. level, to take the eastern water back to the engine-shaft; extend the 60, 70, and 80 ft. levels east of Union shaft (it is here that we expect to find the old lode remaining, in some measure, its former aspect); extend a cross-cut north in the 60 ft. level, Union shaft, where it is partly driven to intersect the north lode, which has only been seen in the 24, north of engine-shaft, where it produced some copper; continue to extend on the middle lode; also continue to extend the cross-cut south-west of Hannah's shaft, to intersect the south counter lode, and the 10 fathom level east of the great lode. I consider that, by persevering with the above recommendations, great and important discoveries will be made.—JOHN WEBB.

Mr. SHIPTON moved, that the reports and financial statement be approved, received, and adopted.—The resolution was seconded by Mr. HARRISON, which was carried unanimously.

Mr. Edward Wright and Mr. Robert M. Freeman were appointed auditors for the ensuing year; and an additional rule was passed directing the meetings in future to be held quarterly.

The proceedings then terminated with a vote of thanks to the chairman, committee of management, Mr. R. C. Manuel, the secretary, and Captain Webb, the captain of the mine.

IMPERIAL BRAZILIAN MINING ASSOCIATION.

A meeting of shareholders was held at the company's office, Winchester House, Old Broad-street, on Thursday,

Capt. LEICESTER VERNON, R.E., in the chair.

The advertisement convening the meeting having been read, and the minutes of the last meeting confirmed, the CHAIRMAN proceeded to read the report, which stated that nothing had occurred to alter the views since the working of Gongo Soco was resumed, or the favourable results that were and might still be expected from it. In the Gongo Mine, there was an ample supply of workings, with the chance of meeting in it, as they did in the month of August, remnants of veins, bunches, or arches, left in the ground, or lines or veins in new ground, that had not been reached within the range of operations in the days of prosperity. The samples or portions of the Cumba vein, which had been tried, had given fair promise of what may be expected from pursuing the vein in its course. The entire produce for the last six months of 1853 had been derived from this middle section of the Gongo Mine, and amounted to 93 lbs. 2 ozs. 1 dwt.—a larger produce than had been obtained from the same period since 1846. This result, though not equal to the whole expenditure of the association for six months, would have more than covered the cost of the work by which it had been obtained.

[The CHAIRMAN then remarked, that the sale of this gold produced 4011 l. 15s. 2d., and the cost of raising it might be estimated at about 2400 l.; leaving a profit from the middle section of the mine for six months of about 1600 l.] The report continued to set forth that the work required for opening the Camara lode had been steadily continued; and the lode presented the same favourable appearances as to extent, position, and probable value. Owing to the failure in execution of the patent portable stamps (Walker's), the daily returns from the stamping of stone broken regularly from the lode could not be placed before the meeting. These stamps had been found on trial to be liable to constant breakages, and to be only equal to crush about 4 tons of stone in 24 hours, instead of 40 tons, as the directors had been induced to expect. The consequence of this failure has been to postpone the produce from this lode for at least three months; and means were being prepared to crush the stone by the ordinary process of stamping. At Cata Funda, the works were resumed on the 2d Jan.; and the directors hoped to be able to report at the next general meeting that the traditional accounts handed down from former days of the existence of a rich deposit of gold in this spot were not unfounded. With regard to the power of selling or leasing the estates belonging to the association, which the wording of the deed left doubtful, a meeting was convened on 23d January; and the directors were now armed with sufficient power for that purpose. The directors were happy to state that the Emperor of Brazil had sanctioned the measure reported at the last general meeting, exempting the association from all duty upon gold raised from its mines, until they were again brought to a more prosperous state.

The following statement of accounts for six months, ending 31st December, 1853, was then read:—

Balance 1st July	£3965 8 0
Transfer stamps, &c.	169 17 6
Cash received for gold	878 6 6
Half-year's dividend on 8000 l.	141 19 9
Interest on balance at bankers	2 19 11
Proceeds of 5000 l., 3½ per cent., part of reserve fund sold out	4895 0 0 = £5953 8 8
Paid for transfer stamps	255 17 6
Wages and general expenses	6212 15 6
Wages at Gongo, Bananal, and London	667 0 10
Office and general expenses in London	1001 7 8 = 7987 7 6
Leaving balance at bankers	£596 1 2

In addition to which there was gold on hand 1st January, 3731 l. 17s. 8d., and stamps (less spoiled), 129 l. 15s.

The CHAIRMAN enquired, if any gentleman wished to put questions to the board? They would be most cheerfully answered. If any question had suggested itself to the meeting, after having heard the report, he hoped it would not be withheld—the directors being desirous that the proprietors should be furnished with all the information they required.

A SHAREHOLDER said, he thought attention ought to be drawn to the costs. It was true that the Gongo Mine had produced somewhere about 4000 l.; but it must not be forgotten that it had cost 2200 l. to get it—about 50 per cent.

The CHAIRMAN said, that sum included the payment of the whole mining staff and one-third of the commission's salary. It was not incurred for merely raising the gold; and this little detail had only reference to the Gongo. It should be remembered that the directors had always expressed an opinion that this mine, standing *per se*, would pay for itself; and it was satisfactory to find that it had at length done so.

A SHAREHOLDER: Still it has cost you 50 per cent.—The CHAIRMAN: Very true, but it has cost us more to get nothing (a laugh); and we hope to get on much better.

A SHAREHOLDER: But it ought to have been got cheaper.—The CHAIRMAN assured the proprietor that the directors were not insensible to the importance of economy. The Gongo, he would repeat, had paid itself, and more than paid itself—having produced the company 50 per cent. He considered they were now in a very favourable position, as far as the mine was concerned. In reply to a shareholder, the CHAIRMAN said that the sum of reserved fund at present in hand was 6000 l.

The meeting terminated with the usual vote of thanks to the chairman and directors.

ADELAIDE LAND AND GOLD COMPANY.

The first annual general meeting of shareholders in this company was held at Paris, at the Salle Lamareille, Rue Richelieu, on Thursday, the 27th April.

The meeting was attended by several of the members of the Conseil de Surveillance, and also by Mr. Hancock, solicitor to the company.

M. AMIS, one of the members of Conseil, read the extracts from the statutes relating to the meeting of shareholders.

A list of shareholders present and represented was then read, when there appeared 13 shareholders, and 13 representatives. The meeting, holding nearly 13,000 shares, B. Hallett, Esq., was proposed and unanimously elected chairman of the meeting. M. Le Vicomte de l'Esperance, and M. W. Laing, were appointed scrutineers; and M. de St. Venant secretary to the meeting.

The CHAIRMAN then called upon the gerant to read his report to the meeting.

The GERANT (Charles Stewart, Esq.) then proceeded to read his report to the meeting of the state of the company's affairs, together with a balance-sheet of its accounts made up to the 31st of December last. After stating the establishment of the company on the 31st January, 1853, as a *société en commandite*, and the objects, and the terms of the provisional contracts for the purchase of several valuable properties in South Australia, and the completion of the sale of the greater portion to the company, and that the properties were likely to prove of great value—the agricultural land having been reported upon as of high value, and the auriferous districts having proved to contain gold—the report then proceeded to state in detail the steps the gerant had taken in order to set the company to work at Adelaide, from which it appeared that, under powers of attorney, three gentlemen—Messrs. Hallett, Beck, and Stilling—managed the affairs at Adelaide; that officers had been taken, and clerks employed; and that company land and mineral surveys had been appointed to examine and report on all lands offered at the periodical Government sales, or by private contract. The company's agents were thus in a position to form an opinion, and select for purchase the most valuable properties offered for sale; and that at the date of the last despatches from Adelaide, the agents were exploring the South Para gold district of the company; that in order to enable the committee at Adelaide to commence operations at as early a period as possible, the gerant's report went on to state that, in February, 1853, he had remitted to Adelaide 15,000 l.; and subsequently 5000 l. and 10,000 l., making together 30,000 l.

That in addition to the lands acquired by the company under the provisional contracts, the company's agents had made purchases of land amounting to 14,408 l. 4s. 4d.; and that at the date of the last advices from Adelaide, the value of land granted in South Australia was rapidly increasing. The committee at Adelaide had recently commenced re-selling portions of the company's lands, and had sold land for 2361 l. 15s., which had cost the company 1500 l. 15s., thus realising a profit of 861 l. 3s. on this small portion of the company's property. That in addition to this sale, leases had been granted of lands which cost 779 l. 10s., at a rental of 109 l. per annum, with right to the lessee to purchase within three years, for 1528 l.

The report then went on to state, that the above were only given to show the favourable results the operations of the company likely to ensue when in full operation, as from the time necessarily consumed in getting the company organised in Paris and London, and at work at Adelaide, the present report could only speak of the commencement of operations at Adelaide.

The report then explained the balance-sheet of the company, annexed, from which we gathered, *inter alia*, that the assets of the company (over liabilities, which seemed to be trifling) consisted of land account, 11,367 l. 2s. 6d.; balance in hand at Adelaide, 6141 l. 15s. 6d.; on securities in London, 21,688 l. 3s. 8d. (10,000 l. of which had recently been called in and remitted to Adelaide); and balance at bankers, 753 l. 14s. 9d.; making a total of 69,922 l. 2s. 6d.

The report then went on to state, that all the shares had been applied for and allotted, but a pressure on the money market having taken place, the whole had not been paid for; and inasmuch as the auriferous lands of the company had been obtained for shares, and a sufficient capital having been raised, the gerant had not disposed of such shares, but had preferred taking the opinion of the shareholders at this meeting as to the disposal of them, as, in the more than probable event of the auriferous lands of the company proving very valuable, the division of profits amongst the present shareholders would be evident. The zeal and energy displayed by the colonial committee in carrying out the important duties intrusted to them, and the highly spoken of in the report, which concluded by congratulating the shareholders upon the prospect of the company, the purchases of land having been hitherto made on the most advantageous terms, and the sales realising a handsome profit.

The CHAIRMAN then read the report of the Conseil de Surveillance, which stated that the conseil had met from time to time since the formation of the company, for the verification of the accounts of the gerant; also on the general affairs of the company, and to see to the execution of the statutes, in pursuance of the articles thereof; that the gerant's report on the position of the company, and the balance-sheet annexed, had been audited and found correct, and referred to the books, and concerned generally in the report of the gerant, submitting the same, however, for the approval of the meeting. The report then stated that as the company was now in full operation, and the working department would devolve on the establishment at Adelaide, and much less work be required at the seat of the society at Paris and London, the conseil's attention had been directed to reducing the expenses as fixed by the statutes; and that the gerant had at once consented to reduce his salary by 100 l. per annum,

and the conseil would also greatly reduce their amount of remuneration. The report then referred to the satisfactory despatches received from Adelaide, recommending the shareholders to a perusal of them, and concluded by showing that the operations of the company were likely to lead to a profitable result and benefit to the shareholders. The report of the gerant and the Conseil de Surveillance having been presented to the meeting, and the chairman having invited the shareholders to ask any information or question thereon, or to the company's operations.

M. PERRON and Mr. WILSON rose, on behalf of themselves and five other shareholders, representing together about 150 shares, and required that the books and vouchers of the company should be produced for them to inspect, and compare with the balance-sheet.

It was explained that this would be impossible, as the meeting might last for days if each shareholder compared the accounts with the balance-sheet. That the statutes required the conseil to audit the gerant's accounts, which had been done, and found to be correct; and the statutes did not give the right to the shareholders at the meeting to inspect the books, the gerant offering, however, that any shareholder might inspect the books of the company at the office; and the meeting having expressed a very strong opinion that the request of M. Perron was contrary to all usage, and that they were perfectly satisfied the accounts were correct, M. Perron ceased to press his point, contenting himself with entering a protest.

The report of the gerant, and balance-sheet were then unanimously adopted by the meeting, as also the report of the Conseil de Surveillance, approving the reports, ratifying and confirming the various acts of the gerant, and on other matters connected with the affairs of the company, one of which resolutions was to the effect that the gerant should not dispose of the shares remaining to the credit of the company under par.

Various points of information were sought by the shareholders, which were replied to by members of the conseil and the gerant, and seemed to give general satisfaction, our French neighbours seeming to be well informed as to the nature and objects of the company and its position, as also of the colony of South Australia.

The routine business necessary in a company *en commandite* having been completed, the meeting broke up.

[The proceedings having taken place in the French language, we have only given a general report of the meeting. We perceive, however, by an advertisement in one column of this day, that the reports and balance-sheet, together with the resolutions passed at the meeting, will be open for inspection by the English shareholders, at the offices of the company, on the 10th and 11th of May.]

THE AUSTRALASIAN COAL MINING COMPANY.

A meeting of shareholders in this company was held at the London Tavern, Bishops-gate, on Tuesday, Mr. G. B. CARR in the chair.

Mr. WATSON (the secretary) having read the notice convening the meeting, Mr. JOHN TAYLOR, jun. (one of the managing directors), read the following report:

The directors of the Australasian Coal Mining Company, according to the tenor of their notice, given by public advertisement in the London morning papers, as well as by separate letter addressed to each individual who had signed the subscription contract, have convened this meeting of the shareholders, that a statement of the company's past proceedings and present position might be laid before them; and in order that after due consideration of the subject the meeting should determine whether the company shall continue, or be dissolved, and the deposit, after deduction of the expenses incurred, be returned to the holders of shares. It will be in the recollection of every shareholder that the company was formed in the early part of last year, in a period when a great impulse was given to the development of the resources of the Australian colonies. Gentlemen intimately acquainted with the colonies by long residence there formed part of the board of direction, and the application of capital to the working of the rich coal deposits of the Hunter River Valley appeared to them, as well as to the other directors, to offer an important and legitimate field of industry, which promised ample advantage to the shareholders, while it could not be otherwise than beneficial to the colony.

Immediately that the prospectus was before the public the demand for shares was very great, much exceeding the number which the company had at their disposal, thus indicating that the appreciation of the promoters in the objects of the company was fully participated in by the public. The company was based upon the acquisition of two collieries, of which the directors had agreed to take a lease, upon terms, both as to royalty and other conditions, which were considered moderate: testimony of a conclusive kind was furnished to the directors by extracts from the Minutes of Evidence, taken before the Legislative Council of New South Wales, as to the productiveness of the mines, and the good quality of the coal. It was fairly represented that the working of these coal fields might involve the necessity of making a railway, to convey the coal to the port of shipment. This, though felt at the time to be a drawback to a certain extent, was not of a nature to prevent the undertaking from becoming eventually one that would yield large profits to the shareholders, as at that time was selling at Sydney at 3 l. 10s. per ton, with an existing demand beyond the actual means of supply.

The capital of the company was divided into 40,000 shares, of 5 l. each, 1 l. of which was called upon the issue of the shares, the whole number issued having been 35,000. The remaining 2800 were kept in reserve for the colonies, and are still unused; the actual amount received by the company is 37,625 l. The company's petition to the Council for a Royal Charter, chiefly for the object of securing a limitation of liability to the shareholders, which petition was referred to the colony. At the same time, the company prepared a petition to the Legislative Council of New South Wales for an Act of incorporation, which latter they succeeded in obtaining at the close of the last session.

The directors now turned their attention to the necessity of sending out to the colony a suitable agent to inspect not only the collieries taken by the company, but also the other coal-fields in the district. It was necessary that this agent should be well versed in the practical working of collieries, and perfectly acquainted with the local appliances in use in the home collieries, both for the working of the mines and the loading of the ships. Such a person the directors had the satisfaction to find in Mr. Henry T. Plews, a gentleman in whom was united the knowledge of a practical colliery with that of a man of education. Mr. Plews was engaged by the company, together with Mr. Young, an underwriter and assistant—the latter having long experience in some of the best managed collieries in the north of England.

Mr. Plews and his assistant departed for New South Wales early in July, and reached Sydney in September. They lost as little time as possible in proceeding to the district where their investigation was to commence. The directors had requested Mr. Plews in their instructions to him to send by the earliest opportunity after his arrival at Adelaide a report, even if time allowed of his giving only his first impressions. Fortunately, however, he had time to go over the principal part of the coal beds opened, upon which his report, received in the month of January, afforded very interesting details. He visited the collieries which the company had agreed to lease. They were found to possess good workable seams of coal; but their distance from any shipping place he considered would, in the present state of the colony, as regards the cost of labour, preclude the company from working them in profitable competition with those collieries which are situated nearer the port of Newcastle. Mr. Plews's deliberate impression from actual observation on the spot, as to the liability of the company to other coal fields likely to possess the advantages which were deemed necessary for successful working.

He gave sections of several coal beds in the district—some of which exhibited their seams in the face of the cliff overlooking the sea. He spoke favourably of the enterprise of coal working with such improvements as he could introduce, and alluded to the property of one party who possessed collieries equal to the best in the colony, which he had reason to believe he could obtain on fair terms, and which he trusted he should be able conditionally to secure before the departure of the succeeding overland mail to England.

The directors were much gratified by the industry and intelligence which were manifested in Mr. Plews's report; and although the result of his examination of those collieries which the company had agreed to lease was such as to render it inexpedient to commence active operations on them forthwith, they nevertheless judged that the prospects held out of the superior position of the other collieries alluded to would still allow of the company going to work with advantages that would place them on a par with any similar undertaking in the colony. Mr. Plews's successful report reached the directors in the month of February, but contrary to their anticipations, no treaty had been made with the owner of the colliery mentioned in his former report; and the directors, in consequence of the failure of the company to obtain the owners of the land to fulfil his promise of giving his terms for the cession of a portion of the property in question; and thus were the directors left in a state of suspense until the latter end of the month of March, when they received Mr. Plews's third report, the last that has come to hand. This report goes very fully into the proceedings of the workings of the Hunter River district; it spoke of the excitement which existed in the purchase of coal land, the high rates of royalty that were obtained, and the difficulty of securing upon moderate terms any land in close proximity to water; it moreover discloses that the coal land by which Mr. Plews had anticipated a block of coal land that he recommended as eligible was situated 1½ mile from the river, which, if taken, would involve the necessity of constructing a tram-road for the distance, through surface properties, and it is presumed that it could not be executed without provision being made for the payment of way-leaves to the several owners of the land that would be crossed. The circumstances thus described, and the altered position of the company at the present moment, as compared with what it was on its formation, and the directors have thus felt it incumbent upon them to lay the facts before the shareholders. Moreover, this duty is in other grounds imperative upon them, for by the provisions of the charter contract it is stipulated that within three months after the date of the charter being granted, or an Act of the Legislature, which shall confer limited liability in Great Britain, be passed, then the directors are required to call a meeting of the shareholders, who, by a majority of votes, shall determine whether the company shall be continued or dissolved. It therefore remains for the meeting to determine the question.

In conclusion, the directors have to observe that a statement of the receipts and expenditure of the company is prepared, and is open for inspection at the office. It is due to the gentleman of whom the company contracted to lease the collieries at the outset, to mention that he has very handsomely offered no obstacle to the cancellation of the contract, and that the company will, therefore, be relieved from all liability of that account. The directors, judging from the opinions expressed by many shareholders, that a majority would be in favour of a dissolution of the company, and desirous to stay unnecessary expenses as far as possible, wrote out by the last overland mail to terminate the engagements of Mr. Plews and his assistant at the earliest period at which it can be done, consistently with the terms of the agreement entered into with them. The company is under obligation to give them three months' notice in the colony, and to provide them with a free passage back to England.

The CHAIRMAN said, the directors considered the wisest course to adopt in the present state of affairs was to dissolve the company, as they were now in a position to return 19s. out of the l. paid. The total expenses incurred have been 4570 l., but they only proposed to take from the shareholders 188 l., and give them a full release, in return of about 200 l. for contingencies, the difference having been made up by putting the money out to interest. They were deeply indebted to his friend, the left (the owner of the property), who in the most handsome manner had agreed to rescind the contract; he should, therefore, propose that the report now read be received and adopted, and the company dissolved, in accordance with the 15th clause of the deed.—Mr. CHORNER seconded the resolution, which was carried unanimously.

The CHAIRMAN said, the next resolution he had to move was, that the proposal of the directors to return 19s. out of l. be accepted.

A SHAREHOLDER observed that the directors had acted most liberally, but he thought they ought not to tie themselves down to return 19s. (Hear.)

The CHAIRMAN replied that the directors had well considered the matter. They did not want to make any profit, their only object being to divide the money.

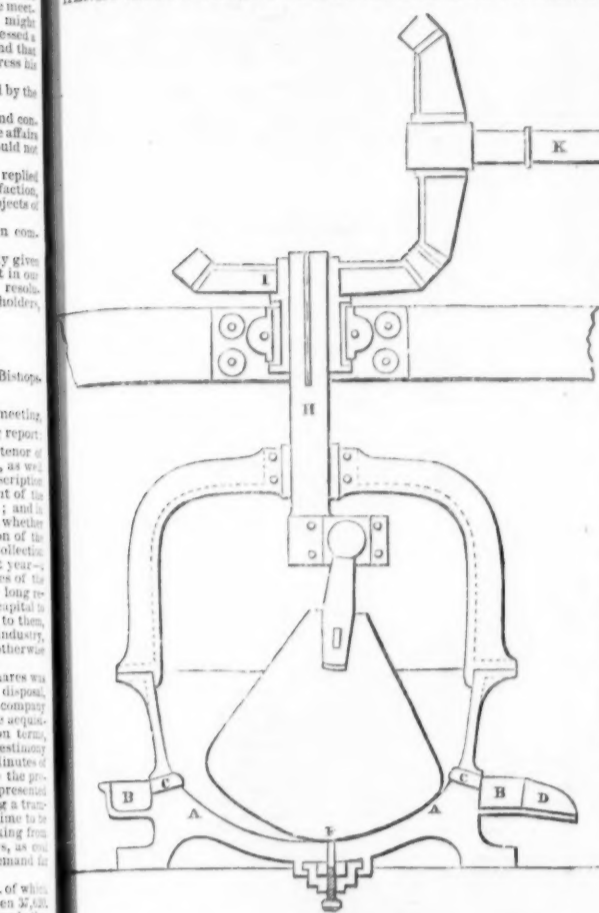
The resolution was then unanimously carried.

Mr. LESLIE FOSTER then moved that the thanks of the shareholders be given to the directors for the manner in which they had conducted the company's affairs, and for their prudence in not entering into active operations before receiving and giving due consideration to the reports of their agents in Australia. He said the resolution be

proposed was only an act of justice to the directors for the course they had taken. They would have lost a much larger sum if the money had been placed in the funds. The resolution was seconded and carried amidst much applause. The CHAIRMAN, in returning thanks, said the directors were all large shareholders, and, of course, had been anxious for the success of the undertaking; but they felt satisfied, when there was not fair prospects, the best plan to adopt was to return the money. On Friday next the shares would be received by the secretary, and a few days afterwards a cheque given for the amount.—The proceedings, which appeared to give great satisfaction to all present, then terminated.

[ADVERTISEMENT.]

HENRY MOSS'S PATENT PESTLE-AND-MORTAR MACHINE.



The aim of the inventor was to produce a crushing, pulverising, and amalgamating machine which would be at once simple, cheap, and efficient. He has succeeded in the first two of these desirable objects will appear evident to all who examine the drawing: whether he has been equally successful with the latter, remains to be proved by practice. The inventor is no wish to bring his machine ostentatiously before the public, but prefers to let it stand or fall by its merits.

DESCRIPTION OF CRUSHING, PULVERISING, AND AMALGAMATING MACHINE.

The wood-cut shows a vertical section of the machine. A A, is a round basin, with a square base, which is to be placed on a cast-iron frame, of sufficient height to admit of a grate on wheels, containing a coke or charcoal, being put under it, to impart the requisite heat to the mercury; B B, is a trough cast round the basin, into which the water and tailings are carried through the apertures, C C, and from the trough by the spout, D. F, is a hole in the basin with an air-tight plug, through which the mercury, &c., are drawn out. G, is a pestle or crusher, which has a rolling motion given it round the basin by a crank, with ball and socket-joint on the end of the vertical shaft, H (the pestle presents a crushing surface equal to the internal area of half the diameter of the basin). There is a sunk key in the top end of the vertical shaft, H, which fits into a corresponding slot in the boss of the wheel, I, which allows the shaft to rise or fall as the material operated upon is increased or diminished under the crusher. The machine may be driven by any description of motive-power, applied to the horizontal shaft, K.—G. Martin's-lane, Cannon-street, City.

NOVEL MACHINE FOR BORING ROCKS.—A new rock borer, invented and patented by Mr. Talbot, is now causing considerable excitement in the United States. It consists, in effect, of a huge 17 feet auger, slowly turning at the rate of one revolution per hour, and advancing at the same rate, from 4 to 8 in. per hour, according to the solidity of the rock perforated. The common auger, as every one knows, is fitted with two fixed cutters, vertical to its centre, each cutting its way spirally into the wood. The cutters of this auger, four in number, are likewise fitted vertically to its centre, and cut their way spirally into the rock, with the combined revolution and advance of the machine. The only difference is in the construction of the cutters, which we shall presently attempt to explain. The principal parts of the machine are as follows:—A carriage of massive iron resting on ways, and pushed forward at the rate above named, by means of a screw, turned by a simple contrivance, similar to that which propels the carriage of a saw-mill, which is readily graduated to produce any desired speed, from 2 to 12 in. per hour. Upon this carriage rests all the machinery, engine included, and its total weight of 150,000 lbs. affords a sufficiently steady basis of operations to prevent the slightest perceptible tremor.—2. A great face-plate like that of a lathe, circular and vertical, resting and revolving on a hollow shaft, large enough to admit the play of a horizontal beam, piston-like, through its cavity.—3. Four cutters (as if a wheel were divided into quarters), with their apexes hinged on the face of the plate in such positions, equidistant, as to bring their segments of circumference at right angles to each other, meeting at the centre of the plate. The horizontal beam above mentioned connects by its arm with each of these segments, at their corners, which meet at the centre of the plate; and in playing back and forth, causes each to vibrate as a segment of a circle which passes through half the diameter of the tunnel, the four meeting at the centre.—4. The circumference of each sector is armed with three small wheels having teeth, not unlike circular saws, so as to strike the face of the rock in the same direction as the cutter's chisel, and to act upon it in substantially the same manner, as they are rolled upon it back and forth by the vibratory swinging of the sectors. Each cutter in succession thus steadily carves away its proper thickness of rock, as it swings back and forth from the centre to the circumference of the tunnel, urged against the rock by the slow advance of the carriage, and borne around by the revolution of the face-plate. The thickness of the shavings carved away by each cutter, varies from 1 to 1½ in., according to the hardness of the rock. Four cutters, passing around in an hour, and each cutting 1½ in. deep, make, of course, a progress of 6 in. per hour, which is the rate now made at Haarlem. It is said that, by allowing for all necessary interruptions, the machine may be run steadily for 20 hours out of 24; making a progress of 10 ft. per day. Sixty horse-power of steam, two engineers, and two men to shovel out the broken rock, comprehend the expense of working the machine at this rate; to which the expense of keeping up the cutting wheels is the only additional item of importance which seems necessary to be added.

MASTER STEAMERS.—There are now in the Southampton Docks four steam packets—viz., the *Santa*, *Colomba*, *Atrato*, and *Himalaya*; three of them have, and one a paddle-wheel, the aggregate burden of which is nearly 12,000 tons, and one a paddle-wheel, the aggregate burden of which is nearly 12,000 tons, and one a paddle-wheel, the aggregate burden of which is nearly 12,000 tons, and one a paddle-wheel, the aggregate burden of which is nearly 12,000 tons.

WRIGHT AND HYATT'S ELLIPTIC ROTATORY ENGINE.

Every one in the least degree acquainted with the steam-engine is aware that it has been a great and constant desideratum to construct an engine wherein the piston, or prime mover, shall have its action in the direction in which its power is to be ultimately exerted; that is to say, that in all cases, except for pumping and a few other purposes, the motion should be circular, or revolving.

The attainment of this desirable object has occupied the attention of almost every eminent engineer from the time of the first introduction of steam as an impelling power. And to prove the fact that a considerable portion of the original impulse of the steam is lost by the reciprocating motion of the piston, beams, and rods, or other parts whose motions are alternate, or reciprocating, we will give the following instances. Thus, the blow whereby a cannon-ball destroys ships, batteries, and men, is solely due to the projectile force imparted to the ball while yet in the gun, but which is, in a great measure, retained by the ball in the form of momentum, and would be wholly retained till the moment of impact, but for the resistance created by its passage through the atmosphere.

A constant rotatory motion, like a constant rectilinear motion, has the property of requiring no new impulse to overcome the *vis inertiae*. We find the most powerful locomotive engines can only start a railway train at a very slow rate, the increase being so gradual, that a train must run, perhaps, a mile or more, before the maximum speed is attained. So, also, it is impossible to stop a train, even after reversing the engines, without the application of powerful brakes, and which can only overcome the impetus by being applied while passing over a corresponding distance to that which it would have required to attain the maximum velocity. The awful railway collisions, which at short intervals startle us from our propriety, are, alas! the too familiar instances of what a vast power is consumed in stopping masses of matter when in motion. And the gigantic arm of war, now about to be wielded for, as well as against, man's progression, will hurl its thunderbolts by the same projectile force, or momentum, as is developed in every other conceivable movement of matter.

No direct experiments, that we are aware of, have ever proved how much power is expended by the reciprocating motion of a steam-engine; but that it must necessarily form a large deduction from the primary force, a moment's reflection on the cases we have cited will sufficiently prove.

But reciprocation is not the only source of loss; weight in moveable or locomotive machinery is another formidable deduction from the effect of the steam. Now, every change of direction requires that the intermediate instruments for transferring or changing the motion ought evidently to be sufficiently strong, and therefore massive, to render a fracture impossible; and *massiveness* implying *weight*, we can easily see how rapidly weight is multiplied by the repeated changes in the direction of the force which becomes necessary to form a convenient arrangement of the various apparatus, with a view to their efficiency, accessibility, or strength.

Again, because *vis inertiae* and *momentum* are such formidable elements of loss, the engineer's skill has been employed to keep such loss as low as possible, by having regard to the physical laws involved in the theory of motion. Thus it has become almost a settled rule that a speed of 200 ft. per minute is about the maximum rate at which the piston of a condensing engine ought to travel, and though railway purposes have compelled the adoption of a greater rate, it is confessedly a considerably increased expense of power. In fact, the reciprocating engine being heretofore the best known instrument for developing steam-power, practical science has done its utmost to modify or decrease the inherent defects, and then submit to those which they have not heretofore been able to overcome. And thus your engineers of the school have set themselves down contentedly, and if any man ventures to hint "he has got a good rotatory," down he goes for a "schemer," or as one who makes ducks and drakes of her Majesty's golden effigies. Well, there is no doubt such has been the fate of all such projects, but the history of the progress of every scientific problem is much the same; and to stop because others have failed to discover the right track, would be to abandon the march of improvement, which every experience demonstrates to be perpetually progressive.

We have said so much by way of introduction to an invention which really appears to be a perfect solution of the rotary problem. It is the invention of Messrs. Wright and Hyatt, at Champion's Vinegar-Works, City-road, fully described, with an illustrative diagram, in *Mining Journal*, Nov. 20, 1852, and however predisposed to shake our heads when we hear of "a rotary," we cannot shut our eyes nor ears to what we have seen and heard of the performance of the engine which is produced under the patent of these gentlemen; and when we state that it has stood the test of two years' experimental working, as well on their premises as in a screw steamer, and been examined and approved by several of our first-rate engineers and mechanicians, we give the strongest *prima facie* evidence of its efficiency and value. The engine we refer to has been in constant work, performing various kinds of duties, and after the lengthened trial it has undergone, the continued satisfaction afforded by its excellent performance has convinced the most sceptical of its excellence, both as regards power, compactness, lightness, durability, and economical consumption of fuel, as well as other desirable qualities.

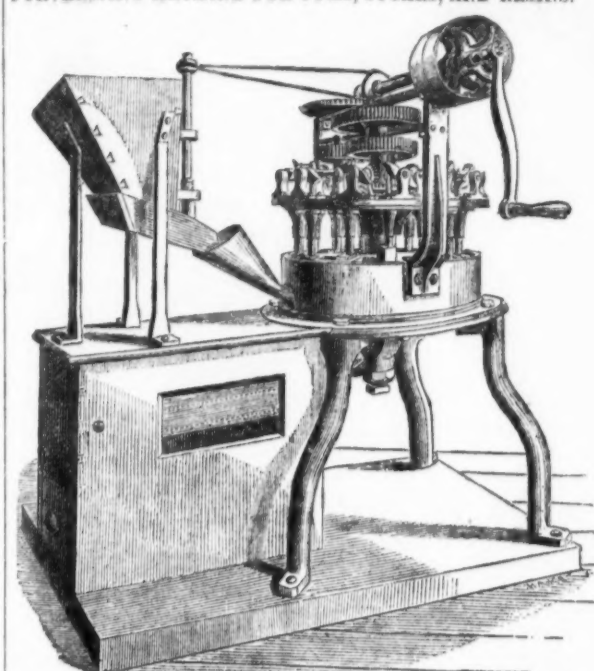
The principal peculiarities of this engine are due to a singular property found to exist in the true ellipse. To explain this, let us refer to the marginal diagram. If we describe an ellipse, then find the point *e*, which is to be equidistant from the general centre, *x*, with the foci, it will be found that any straight line drawn through *e* will be of the same length from point to point—that is to say, between the opposite points of contact with the ellipse. If, therefore, a transverse plane be made to revolve on the ellipse by sliding upon the point, *e*, we shall constantly touch the ellipse—the ends of the sliding plane exactly coinciding with its two extremities; and if such sliding plane be made to carry round with it a shaft, whose axis of rotation is at *e*, we shall produce a constant revolution by the leverage of the piston, as the lever elongates or decreases in passing from and returning to its horizontal position, when for the next half turn the same action is repeated, and so on continuously.

The engine is, therefore, without a valve, because the act of the piston passing the steam ports, which are in the horizontal line, of itself allows the steam to commence its action on the side, which then becomes the recipient of the pressure; the other side becoming at the same moment the exhausting side. To provide for the change of angle which the packing requires to take, so as always to be in contact with the cylinder (for so we must, for want of a better name, call the vessel in which the steam acts), there is a very ingenious provision, being perhaps one of the most elegant and scientific novelties in the invention. It is clear that a solid piston would only form a tangent with the periphery of the ellipse; and the contact would, therefore, be a mere line. To meet this difficulty, the packings which effect the contact with the ellipse—that is to say, those which are parallel to the axis, and touch the elliptic cylinder—turn on a sort of hinged joint, as shown in the marginal drawing. The contact of a large surface of packing, as well in the cylinder as on the piston itself, is, therefore, equal and certain.

The novel features of this ingenious engine are such as to warrant the very high commendation it has received, and we think the most sceptical will allow that its peculiar novelties render it an invention of very high promise; and we can only conclude by expressing a most earnest hope that so large an amount of mechanical skill, perseverance, and ingenuity will meet with its adequate return, by an extensive introduction and general patronage, and that it will shortly become the motive-power in the various appliances for the purposes of peace and war, wherein steam has become the almost universal agent.

PATENT FUEL FOR THE FRENCH NAVY.—A large French ship of 1800 tons burden, called the *Louis Napoleon*, is at the present time in Swansea harbour, taking in a load of patent fuel for the French Government. The fuel is understood to be for the French fleet in the Black Sea, and the presence of the ship excites a great deal of interest.

PULVERISING MACHINE FOR GUMS, SUGARS, AND RESINS.



The above diagram represents a stamping mill for the purpose of pulverising sugar, gums, resinous and other substances, which cannot by the usual methods be ground without clogging the machines, and becoming themselves formed into a cohesive mass. It was invented, and has been patented, in the United States by Mr. O. R. Chase, of Boston, Massachusetts, an extensive manufacturer of confectionary, and is one of a series of machines employed in facilitating his business operations. It consists of an ingenious and quite novel arrangement of stamps attached to a revolving plate, connected with a central shaft acting within a circular chamber. Within this chamber is a circular arrangement, furnished with radiating projections, dividing the outer portion of the chamber into a number of rotative cells. In each of these cells a stamp works; and when the machine is set in motion the stamps and cells are carried round together, the former being alternately lifted and dropped by means of the gearing and cams, as seen placed round the central shaft, each stamp making 80 blows during one revolution, and the machine striking 1,728,000 blows in a day of ten hours. The cells are fed by the hopper on the left hand side of the machine, which having made one revolution, they are emptied through an orifice in the lower part of the chamber into a bolting sieve, placed beneath. The principal peculiarity of this machine is, that the cells in which the pulverising takes place being constantly in motion, the material is carried round by them, and turned over on the fixed plate which forms the bed of the chamber, by which action a fresh surface is constantly presented to the face of the stamp in falling, and can never become pounded into a compact mass, as is the case when these adhesive substances are beaten by fixed stamps, by which the greatest portion of their power is rendered ineffective. The invention has just been provisionally protected in this country by Messrs. Nourse and Co., Cornhill.

COMMERCIAL CREDIT AND MUTUAL ASSURANCE SOCIETY.

In a recent City Article we inserted a brief report of the first annual meeting of the assurers in this society, and its establishment and progress during the past 18 months, being the first experiment in this country for testing the applicability of the principle of mutual assurance to the protection of traders against commercial loss; we now propose to describe the objects and principles of the society, which will most probably be new and interesting to many of our commercial readers. The objects of the society are to reimburse to the assured commercial losses, sustained in consequence of non-payment by debtors, who are traders; to give to the assured immediate assistance in recovering debts due to them, and generally on their behalf to save time, trouble, and expense, in the investigation or winding up of the estates of debtors, whether bankrupt or otherwise, and to effect the speedy payment of dividends; to make to the assured advances when losses have been incurred, with a view to prevent immediate embarrassment, or ultimate failure; and to afford information to the assured respecting the commercial stability of traders, to whom they may propose to give credit. These objects are accomplished by uniting its members in a system of mutual assurance against the bad faith, misfortune, undue speculation, or fraud of others; and although the principles of assurance otherwise well understood, have never been applied to commercial purposes, and the statistics of commercial transactions may be as safely relied on as those of life and fire, this is the first time the system has been attempted to be developed in this country; yet it has even so far been distinctly proved that there is no practical difficulty in applying the principles of assurance to the primary objects of the society.

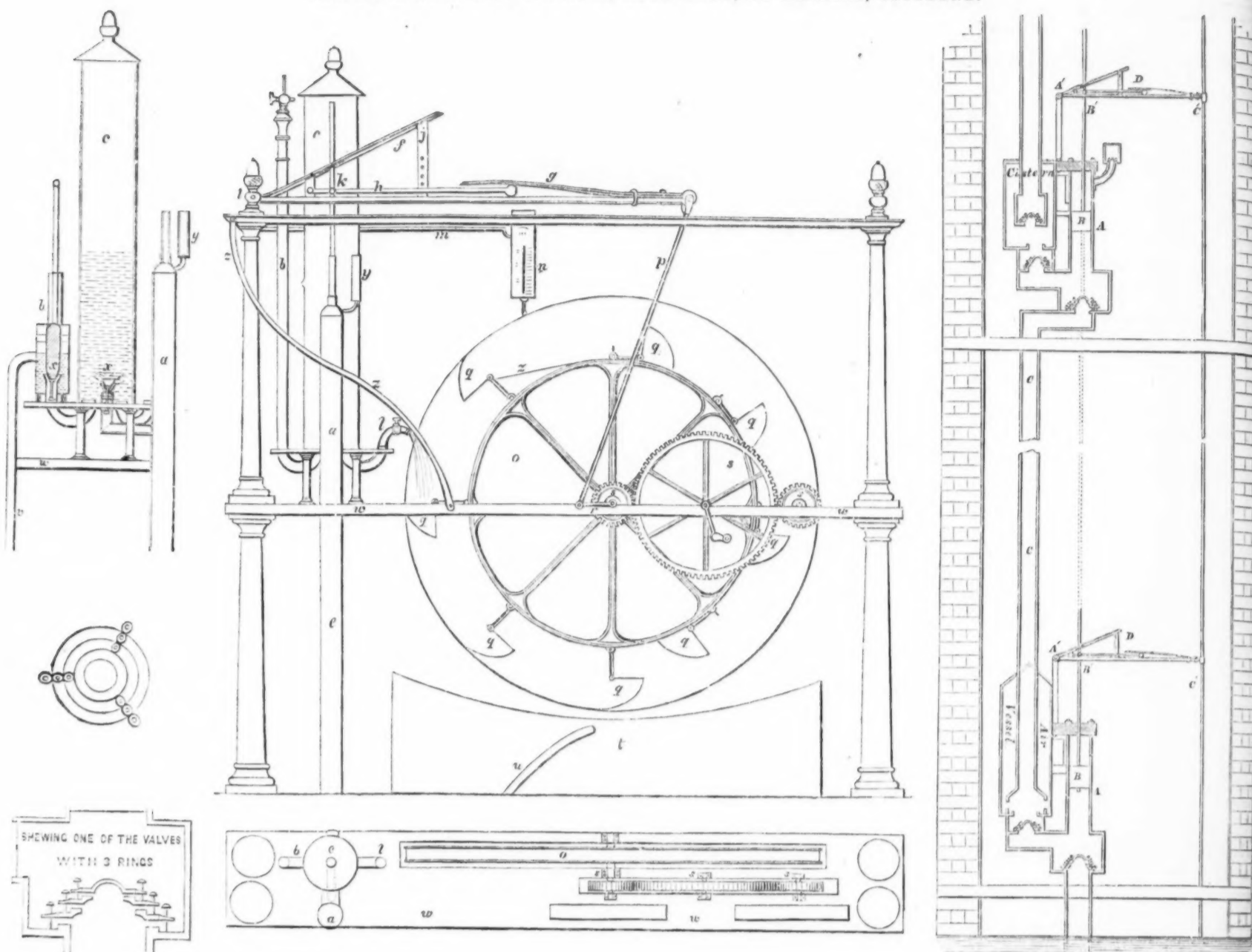
In briefly describing the manner in which these objects are effected, we may state that the society gives to the assured the full benefit of all the premiums, thus differing from a proprietary company, raising a capital, and giving to the shareholders, instead of the assured, all the profit arising therefrom. The premiums, and all recovered debts, are exclusively devoted to the payment of claims for losses; the assured pay on account of expenses a fixed limited sum annually, in return for which the shareholders undertake to provide an efficient manager, accountant, clerks, and officers, and defray all expenses attending the same; thus securing from any depreciation the premium fund and the reserve fund, by careless management, or reckless expenditure, and the extensive and complete machinery of the society is at the disposal of the assured. When the reserve fund reaches a limited amount, all the surplus of the year's premiums is applied in reduction of the next year's premiums, and at the end of each period of five years, if the reserve fund exceed such limit, the excess will be divided among the assured. The rules of the society have been framed with great care, and the premiums regulated according to well-known commercial statistics, with the view to prevent fraud, or improper speculation, on the part of the assured, as well as to afford them the utmost possible convenience; their liability is effectually limited to the premium and management commission; the premiums are payable at the end of each six months, instead of in advance; 10 per cent. of all admitted claims is added to the reserve fund; and to avoid a waste of the funds, by useless litigation, the assured are bound in all matters by the decision of the council whom they appoint.

The progress of this society for 18 months up to 31st Dec. last, has been highly satisfactory, comprising among its assurers several of the large houses in London, Manchester, Liverpool, Bradford, Glasgow, and other large towns; and there is no doubt but that great consolidation of credit will be effected by its operations, and beneficially affect the whole trading community; more particularly in holding up fraudulent men to public exposure, and legal punishment, in a way which can seldom, if ever, be accomplished by an individual creditor.

PERMANENT WAY OF RAILWAYS.—Mr. John Pym, of Dimico, has patented an invention, which consists in constructing sleepers (which are transverse sleepers) of earthenware, slate, stone, or other suitable materials; and of whatever material they may be made, they are formed hollow, instead of solid as heretofore. In order to prevent what is termed sopping, the patentee perforates the bottom or sides, to allow the water to enter the interior chamber thereof, and to run off at either end. To fix the chairs upon the sleepers, where not desirable or practicable to adopt the methods now in use, the sole of the chair is formed sufficiently long to overlap the sides or edges of the sleeper; and the ends of the sole are secured by passing a bolt from side to side, through the sleeper, and fastening the same by a nut, pin, or rivet. To prevent the jarring of the chair and sleeper, wood, felt, or other suitable material, is placed between the chair and the sleeper. The patentee claims—First, the construction of hollow perforated sleepers, as hereinbefore described.—Second, the construction of sleepers of slate and earthenware.—Third, the construction of chairs, and mode of fastening the same, as hereinbefore described.

DRAWINGS AND DESCRIPTION OF AN IMPROVED WATER RAISING APPARATUS.

PATENTED BY F. C. MOUATIS, OF EARLSTOUN, BY MELROSE, SCOTLAND.



EXPLANATION OF THE DIAGRAMS.

I.—THE ENGINE:

- a, — Cylinder, in which the piston is placed.
 b, — Branch pipe, in which a pressure valve is placed.
 c, — Air vessel, or cylinder.
 d, — Ascending pipe, or main.
 e, — Supply pipe.
 f, — Balancing lever.
 g, — Spring of ditto.
 h, — Double lever.
 i, — Centre to which the balancing frame is attached.

- j, — Guard for the double lever.
 k, — Piston rod, to which the connection is made with the frame and lever.
 l, — Supply valve for buckets.
 m, — Lever of pressure gauge.
 n, — Spring index for ditto.
 o, — Water-wheel.
 p, — Buckets of ditto.
 q, — Connecting rod.
 r, — Crank.
 s, — Wheel and pinions.
 t, — Trough for waste water.
 u and v, — Pipes for waste water.

- w, — Frame to which the machinery is attached.
 x, — Valves opening into the air vessel.
 y, — Ditto waste pipe pressure valve.
 z, — Safety valve, for regulating the cylinder.
 z, — Guard for lifting the buckets.

II.—THE WATER RAISING APPARATUS:

- A, — Cylinder.
 B, — Piston.
 C, — Ascending pipe.
 D, — Lever.
 A', — Stay for fixing the lever.
 B', — Piston rod.
 C', — Connecting rod.
 D', — Balancing spring.

Sir,—I have frequently availed myself by means of your valuable Journal, to bring forward an improvement in the manner of raising water from mines, with a view to the economising of power, and also for other purposes, considering it a proper medium of communication with that class of readers who are mostly interested in mining operations. It has also been brought forward by parties taking opposite views to it, and I am indebted to those parties, having availed myself of their remarks in maturing and bringing forward further improvements. I may allude to an able article in your Journal of the 6th August last, which appears to have been written by a gentleman who could appreciate the economising of power by a succession of syphons, but who did not see how the operation could be effected, not considering that the pressure of the atmosphere could be overcome by mechanical power. An answer to this communication appeared in your Journal of the 15th October, in which the writer alluded to was referred to the drawings, in order to remove all doubts with respect to its capabilities. But the writer of the later article brings forward something of far more importance. In the first place, that this power is applied to an hydraulic balance; and, secondly, that a motive power may be obtained by this water that could be applied to the raising of it, and also for other purposes. This is no ordinary announcement, being nothing short of a new motive power. If mechanical power, being applied to an hydraulic balance, will move a body of immense magnitude, this is that power, and this balance being obtained by a lever of double power, of the form and proportions as shown in the drawings, which acting on two centres, and balanced by springs of suitable strength, makes this part of the apparatus of great importance. There is no weight or pressure that cannot be attained by this lever that is attainable by mechanical steam power; and the balance always maintained by it makes the power required to move it proportionably small. It may also be fitted up on a very small scale, to send, as it were, a small spring to supply a cistern of no great height, or, by a succession of syphons, raise water from a mine a thousand feet in depth. It only becomes a matter of calculation, the whole being based on sound principles and the known laws of Nature. This apparatus is also adapted for machinery of any dimensions, and with cylinders of from 1 inch to 36 or 40 inches diameter the principle will always be found applicable. That a motive power is attainable by means of this lever is a natural consequence, and I have fitted up an engine that will answer the purposes the writer of that article had in view (see the drawings). Four cast-iron pillars are fitted up to support a table, or frame, into which the machinery is placed; upon this frame is placed another height of pillars, which are also connected on the top with a frame. This engine consists of a part of the apparatus already described, in addition to which is a pressure or regulating valve, connected to a pressure gauge by a lever from the piston rod of this valve, which serves as a fulcrum; from the index of this gauge the pressure is ascertained. The air vessel is required of a proportionate height, and of sufficient strength, in addition to which is a connecting pipe, to bear any pressure that may be put upon them. The condensing of the air is occasioned by forcing the water into this vessel by the piston, on the balance lever being moved. The next thing we have is a water-wheel, connected to which is also a wheel and two pinions, to

which are provided cranks for connecting them, as shown in the drawings. This water-wheel is provided with eight buckets, into which the water is discharged: these buckets are made to fall back upon the wheel when they are rising, and, by means of a guard, are raised to receive the water at the supply-valve. This will be found an economising of power. It is necessary to have this wheel encased with galvanised sheet-iron or zinc, the upper part in two pieces and the under part connected to the cistern. This prevents the water from escaping, and a small engine by this means may be used for various purposes; the same water being returned will keep up the supply. This power may be applied to various purposes, being provided with an ascending pipe, or main, into which the spare water may be admitted; this is done by opening the valve d, but care must be taken not to exhaust the supply. There should always be a dropping from the pressure valve, to secure the pressure; the water, by means of this main or ascending pipe, may be carried to a great height, the air vessel being of a form and size suited to bear a higher pressure than could safely be put on it with steam power: the temperature being always the same with cold water and air, for this reason a greater pressure may safely be applied. It may be asked, where is this power to be obtained? as the buckets with a small stream of water cannot supply it. This objection is removed by considering the force of this stream being exactly in proportion to the pressure of the air in the vessel, and it may be four or five hundred times greater than a running stream. This power may be applied along with steam or water power, and the movement, if taken from these and applied to the lever of the water-wheel, may in that case be dispensed with. By this means an additional supply of water may be returned from the pit of the water-wheel, to make up a regular supply of water for machinery.

Having given an outline of the description of the engine, I shall not enter into that of the water-raising apparatus, as it was formerly described in your Journal; but I wish to draw the attention of your readers to the improved valves, well adapted for pipes of large dimensions, an improved form of which may be seen in the drawings.

F. C. MOUATIS.

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